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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,614	05/14/2001	Shuichi Furuoya	APM-01102	4827

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EXAMINER

JOLLEY, KIRSTEN

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,614

Applicant(s)

FURUOYA, SHUICHI

Examiner

Kirsten Crockford Jolley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 22-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 22-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/453,428.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendments/Arguments

1. It is noted that "circumference" is defined as the perimeter of a circle, therefore the phrase "circumferentially around" (in line 5 of claim 22) has been interpreted as requiring an electric field that is around the semiconductor substrate and coating material in a circumferential manner, i.e., present around the perimeter or periphery of the semiconductor substrate and coating material.
2. The 35 USC 102(e) rejections over Naka et al. (US 5,935,331) have been withdrawn in response to Applicant's amendments to claim 22 because, since Naka et al. teaches that the electric field is applied to the coating material itself and not around the periphery of the substrate, Naka et al. does not disclose an electric field that is *circumferentially around* the substrate and coating material.
3. The 35 USC 102(b) rejections over JP 5-259053 have been withdrawn in response to Applicant's amendments to claim 22 because, since JP '053 illustrates in Figure 1 that the substrate 1 extends beyond the electric field generated between stages 2 and 9, JP '053 does not disclose an electric field that is *circumferentially around* the substrate and coating material.
4. Applicant's arguments filed March 31, 2003 have been fully considered but they are not persuasive.

Regarding the 35 USC 102(b) rejections over McMillan et al., Applicant argues that McMillan discloses applying a DC bias between a substrate holder and a barrier plate to effect coating of a substrate and that no electrical field is generated circumferentially around the

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substrate and coating material during the coating process. The Examiner disagrees. McMillan et al. discloses that a DC bias is applied between substrate holder 4 and barrier plate 6, both of which are taught and illustrated to have a diameter greater than the substrate 5 in Figure 1 and in col. 9, lines 2-4 and 19-29. Also, McMillan et al. teaches that the deposition area is between the barrier plate and substrate holder at col. 11, lines 22-28. Therefore, the electric field in McMillan et al. extends not only above the substrate 5 but also around the circumference/periphery of the substrate and the coating material and meets Applicant's limitation of "generating an electric field circumferentially around said semiconductor substrate and said coating material." It is noted that Applicant's claims do not require that the electric field is *only* present circumferentially around the substrate and coating material. The transitional term "comprising," which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 948) ("comprising" leaves "the claim open for the inclusion of unspecified ingredients even in major amounts").

With respect to the 35 USC 103(a) rejections over JP '669 in view of JP '667, Applicant argues that neither JP '669 nor JP '667 taken alone or in combination disclose generating an electric field circumferentially around the substrate and coating material. Applicant argues that JP '667 appears to teach only the generation of an electric field between the input nozzle and the substrate holding chuck. Applicant argues that JP '669 discloses a ring of elements in Figure 5 however it is not clear that these elements are used to generate an electric

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field circumferentially around the substrate and coating material, and the nozzle 15 in Figure 5 is not shown connected to ground or a power source so as to polarize the liquid dispensed from the nozzle. The Examiner notes the attached JPO computer translation of JP 8-153669. In paragraphs [0019] and [0029] to [0036] of the computer translation, JP '669 teaches that the annular electrode or ring of elements of Figure 5 are indeed used to generate an electric field circumferentially around the substrate and coating material. Additionally, it is noted that paragraph [0010] of JP '669 teaches that the voltage is applied to nozzle electrode 16 in nozzle 15, therefore nozzle 15 is connected to a power source. As stated in the prior Office action, JP '669 merely lacks a teaching of rotating the substrate. JP '667 is cited only for its teaching of a similar process whereby an electric field is formed between the nozzle 4 and an electrode in the spin chuck, whereby the spin chuck and wafer are rotated to uniformly distribute the coating material on the top of the wafer. It would have been obvious for one having ordinary skill in the art to have rotated the semiconductor wafer and spin chuck in the process of JP '669 upon seeing the prior art of JP '667 in order to obtain an even more uniform coating on the wafer.

5. This Office action is made non-final because, upon review of the attached computer translation of JP 8-153669, claim 26 is newly rejected over JP '669 in view of JP '667, as discussed in paragraph 9 below.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 22 and 27-28 are rejected under 35 U.S.C. 102(b) as being anticipated by McMillan et al. (US 5,456,945).

The claims remain rejected for the reasons set forth in the prior Office action as well as for the reasons discussed in paragraph 4 above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 8-153669 A in view of JP 4-135667 A.

Claim 22 remains rejected for the reasons set forth in the prior Office action as well as for the reasons discussed in paragraph 4 above.

As to claims 23 and 24, JP '669 teaches varying the intensity of the electric field circumferentially around the substrate, such as in regions facing each other or in perpendicular intersection in [0032] to [0034]. As to claim 26, JP '669 teaches changing voltage potential with time in paragraph [0035]. Claims 25, 27, and 28 remain rejected for the same reasons set forth in section 6 of the prior Office action.

Conclusion

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 703-306-5461. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on 703-308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1193.

kcj
June 10, 2003

Kirsten C. Jolley
Kirsten C. Jolley
Patent Examiner
Technology Center 1700